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ABSTRACT

A nationwide comparative study of the 677 sites using DISCOVER or SIGI (computer-assisted career guidance systems) as of June 1984 was made. Software-based and institutionally-based factors influencing system use were explored. The former included theoretical bases, ease of software usage, and developer's implementation assistance; while the latter included staff competence, organizational dynamics, financial resources, clientele, implementation plan, and system integration with other activities and facilities. The sample included 408 respondents (60 percent of the 677 DISCOVER and SIGI sites surveyed). Multivariate log-linear models were used to analyze data in five areas of systems use, and univariate analyses were used in two other areas. Results suggested that institutionally based factors, not software-based factors, were largely determining how DISCOVER and SIGI were used. However, it was noted that software-based factors, such as system theory bases, might be emphasized more by researchers, developers, and practitioners in order to maximize the impact of computer-assisted career guidance systems. (The report includes 10 tables and the survey instrument.) (KC)

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A NATIONAL COMPARISON OF THE USE OF DISCOVER AND SIGI: TECHNICAL REPORT NO. 2

by

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U.S. DEPARTMENT OF EDUCATION
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Preface

This report describes the results of a nationwide comparative study of the 677 sites using DISCOVER or SIGI as of June 1984. Software-based and institutionally-based factors influencing system use were explored. The former included theoretical bases, ease of software usage, and developer's implementation assistance, while the latter included staff competence, organizational dynamics, financial resources, clientele, implementation plan, and system integration with other activities and facilities. The sample included 408 respondents (60.3%) of those surveyed. Multivariate log-linear models were used to analyze data in five areas of systems use, and univariate analyses were used in two other areas. Results suggested that institutionally-based factors, not software-based factors, were largely determining how DISCOVER and SIGI were used. However, it was noted that software-based factors, such as system theory bases, might be emphasized more by researchers, developers, and practitioners in order to maximize the impact of computer-assisted career guidance systems. The report includes 10 tables and one appendix. The authors acknowledge the support and assistance of personnel at the American College Testing Program and the Educational Testing Service in completing this research.

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A NATIONAL COMPARISON OF THE USE OF THE USE OF DISCOVER AND SIGI: TECHNICAL REPORT NO. 2

Background

Computer-assisted career guidance (CACG) systems are becoming a major resource in the delivery of career guidance services. National surveys conducted by Chapman and Katz (1981) and the Association of Computer-Based Systems for Career Information (ACSCI) (1983) have indicated that millions of adolescents and adults are using CACG systems in a variety of educational and public service settings. Harris-Bowlsbey (1983) contended that CACG systems have proliferated because of their capability to: 1) arouse awareness of the need for planning; 2) stimulate broad awareness of potential alternatives; 3) teach a process of decision making; 4) provide recent, easily accessible information; and 5) provide systematic treatment with individualization.

Research on CACG systems summarized by Cairo (1983), Clyde (1979), Harris (1974), and Parish, Rosenberg, and Wilkinson (1979) has indicated that after using a CACG system: 1) clients react positively to it; 2) clients' knowledge of self and the world of work is expanded; 3) clients' career and educational plans are more specific; 4) clients have greater confidence in their career decision making ability; and 5) clients appear to be more motivated to use additional career planning resources. While not all CACG systems can equally generate these effects, the expanding use of CACG systems and general evidence of positive impact supports continuing efforts to develop, implement, and evaluate this technology.

Using the existing CACG literature to guide the future development and evaluation of systems has two distinct limitations. First, studies vary considerably in breadth and clarity of information describing the treatment conditions, i.e., how the CACG system was used to provide services. Second, very little data describing current national trends related to the design and implementation of CACG services are available. Consequently, practitioners abreast of current career interventions may be aware of this technology's potential effectiveness, but practitioners have little information, other than general suggestions sometimes offered by system developers, to guide their successfully implementing a CACG system.

A variety of factors influence the ways in which a CACG system is used as a program component; these factors can be broadly categorized as either <u>software-based</u> or <u>institutionally-based</u>. <u>Software-based</u> factors include: a) the theory underlying system design and content; b) users' ease of understanding and operating software, e.g., user friendliness, human factors; and c) software developers' assistance in implementing software. <u>Institutionally-based</u> factors include: a)

staff competence; b) organizational dynamics; c) financial resources; d) clientele; e) CACG system implementation strategy; f) integration of a CACG system with other academic, counseling and guidance services; and g) physical facilities.

In an effort to describe current use of CACG systems on a national basis, Sampson, Shahnasarian and Reardon (1985) provided data on how 438 institutions used a CACG system, DISCOVER (American College Testing Program, 1984) or the System of Interactive Guidance and Information (SIGI) (Educational Testing Service, 1984). Cairo (1983) and Parish, Rosenberg and Wilkinson (1979) stressed the need for comparative evaluations of CACG systems. Comparative evaluations isolate a CACG system's impact on service delivery and user outcomes. The present study continued earlier work reported by Sampson, Shahnasarian and Reardon (1985); data from this study were reanalyzed to compare DISCOVER and SIGI use.

Purpose of the Study

This study sought to identify the dominant factors, either software-based or institutionally-based, that influenced national use of DISCOVER and SIGI. If significant differences exist in these systems' use, then software-based factors would appear to have a stronger effect on CACG system use than institutionally based factors. In this case institutions would need to plan for the resulting specific impact of implementing a particular CACG system. If significant differences between systems do not exist, it would appear that institutionally-based factors dictate CACG system use. In this case, institutions would need to plan for the resulting generic impact of using any CACG system. The nature of potential differences between DISCOVER and SIGI use were also investigated.

Method

Choice of CACG Systems

The DISCOVER and SIGI systems were selected for this comparative analysis for three reasons. First, and most importantly, these systems have different underlying theoretical assumptions that have influenced their design and content. DISCOVER is based on an eclectic theory of career guidance that JoAnn Harris-Bowlsbey formulated from the work of Holland (1973), Prediger (1976; 1981), Super (1957; 1980), and Tiedeman and O'Hara (1963). SIGI is based solely on the theory of career guidance developed by Katz (1966; 1968; 1969; 1973; 1980). The content of each system reflects the respective differences in theory bases.

DISCOVER consists of four components that include: 1) self-assessment (SELF INFORMATION); 2) identification of occupational alternatives (STRATEGIES FOR IDENTIFYING OCCUPATIONS); 3) reviewing occupational information (OCCUPATIONAL INFORMATION); and 4) identification of educational alternatives (SEARCHES FOR EDUCATIONAL

INSTITUTIONS). Users, on the basis of self-defined needs, determine the number and order of components to complete. SIGI contains five components: 1) self-assessment (VALUES); 2) identification of occupational alternatives (LOCATE); 3) reviewing occupational information (COMPARE); 4) reviewing information on preparation programs (PLANNING); and 5) making tentative occupational choices (STRATEGY). Users complete all five components sequentially, with the option of then returning to use any SIGI component. The concept of values provides a focal point for use of SIGI.

The other two reasons for selecting DISCOVER and SIGI were (2) the user friendliness/human factors of each system are similar,and (3) the level of support provided by both of the software developers is similar (although DISCOVER features more direct provision of staff training).

Sample

Of the 677 DISCOVER and SIGI sites surveyed, 438 responded, yielding a 64.7% response rate. An examination of these sites' questionnaires found that 30 respondents (7%) reported having both systems. Since the present investigation examined the potential of differential system usage among institutions, the results reported below were computed from survey respondents using either DISCOVER or SIGI. Thus, these results are based upon a sample of 408 respondents, or 60.3% of the population surveyed. The reader should may refer to an earlier report by Sampson, Shahnasarian, and Reardon (1985) for a comprehensive presentation of the descriptive statistics computed on all respondents.

Instrumentation

A literature review yielded a series of factors potentially related to CACG effectiveness. Research questions and an initial pool of questionnaire items were developed. A 52 item questionnaire was written, "Survey of Institutions Using DISCOVER and SIGI," and developers at ACT and ETS reviewed and commented on its content validity. Other external reviewers with expertise in measurement and evaluation commented on the clarity of instructions, item presentation, and response formats. The original questionnaire was shortened to 30 items (Sampson, Shahnasarian, & Reardon, 1985).

Results

Distribution of DISCOVER and SIGI

Twelve respondents (2.9%) used DISCOVER's mainframe version while 212 respondents (52.0%) used it on a microcomputer or a mini-computer. With respect to SIGI, 68 survey participants (16.7%) used it on a mainframe or a minicomputer and 116 respondents (28.4%) used it on a microcomputer.

Descriptive and Multivariate Data Analyses

The survey included 30 items (see Appendix). Several questions allowed for multiple responses to a single item. A total of 97 variables were examined. Descriptive data on all survey items by group are presented in Table 1.

A multivariate approach was preferred over a univariate approach to analyze the data in order to minimize the chance probability of obtaining significant results (i.e., committing a Type I error). Multivariate log-linear models were used to analyze related data in 5 areas of CACG system use: 1) institutional characteristics; 2) system configuration; 3) integration with other services; 4) counselor and staff intervention; and 5) usage statistics. Because of statistical considerations (discussed later), univariate analyses were conducted on two other survey areas, system management and system implementation.

Log-linear models were used in the analysis of relationships between variables cross-tabulated into multiway frequency tables. The log-linear model represents the logarithm of the expected cell frequency as a linear combination of effects. According to Brown (1981), the log-linear model is similar to an analysis of variance (ANOVA) model except that the logarithm of the expected cell frequency replaces the expected value in the ANOVA model. The general log-linear model does not distinguish between independent and dependent variables; all variables are treated alike as "response variables" whose mutual associations are explored (Knoke and Burke, 1981).

A likelihood ratio (L^2) is the statistic generated by a specified log-linear model. Large L^2 values indicate that the hypothesized model does not fit the data well and should be rejected as an inadequate representation of the relationship among the variables. Computing L^2 involves the following process:

1) Selecting variables for the model. Computer processing limitations required the authors to collapse several variables' levels in the survey.

2) Performing a hierarchical analysis to obtain the marginal and partial associations of the interrelationships of selected variables. The authors examined these associations for main effects, two-way interactions, and three-way interactions.

3) Specifying the log-linear model. After computing the marginal and partial associations through the hierarchical analysis the authors eliminated all effects that were not significant at the .05 level for the log-linear model.

The BMDP-4F statistical software package (Brown, 1981) was used to perform the five log-linear analyses. The two univariate analyses were conducted with the Statistical Package for the Social Sciences

(SPSS: Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). The results of these seven analyses are presented below.

Institutional Characteristics

The survey included four questions pertaining to institutional characteristics: type of institution, number of full-time or part-time students enrolled, percentage of adult students over the age of 25, and the percentage of DISCOVER and SIGI users over the age of 25. Table 2 shows the level strata that the investigators determined for this model's three quantitative variables. As indicated in Table 1, the following descriptive statistics were computed from data on these variables: number of full-time or part-time students, fewer than 1,000 (27.0%), 1,000 to 4,999 (34.6%), 5,000 and over (38.4%); percentage of adults over age 25, M= 29.8, SD= 21.0; percentage of DISCOVER or SIGI users over age 25, M= 24.3, SD= 24.3. These statistics were used as guidelines in setting level strata. Thus, the institutional characteristics log-linear model was computed on five variables: the four named above and the System variable. Table 2 displays the levels established for these variables.

The hierarchical model designated from the five-variable cross tabulation included all three-way interactions, two-variable parameters, single variable effects, and the grand main effect. After examining the partial and marginal associations for the full model, the non-significant effects were eliminated and the following effects were specified for the log-linear model: main effect of type of institution; main effect of percentage of adults over age 25; two-way interaction of the number of full-time or part-time students and percentage of adults over age 25; and two-way interaction of percentage of adults over age 25 and percentage of DISCOVER or SIGI users over age 25. This model yielded the following statistics: L^2 82.25, df = 48, p = .01. Inspection of Table 1 shows that high school institutions accounted for 44.2% of DISCOVER use but only 1.1% of SIGI use, while postsecondary DISCOVER and SIGI use was 47.3% and 91.3% respectively. SIGI was more likely to be used in larger institutions and to be part of a counseling center or career planning/placement office as opposed to a guidance office.

System Configuration

Two questions addressing system configuration were presented: number of computer terminals or microcomputers available for DISCOVER or SIGI, and the location of these terminals and/or microcomputers. The investigators collapsed the latter item into two variables for the analysis, traditional location and nontraditional location. Thus, the system configuration log-linear model was computed on four variables: the three variables named above and the System variable. It should be noted that the level values specified for the number of terminals variable was set at 1 and greater than 1, respectively, on the basis of the item's distributional characteristics; 302 respondents (74.0%) reported the availability of a single terminal/microcomputer for system use. Table 3 presents the variables and their levels that were established for the system configuration model.

The hierarchical model designated from the four-variable crosstabulation included all two-way interactions, single variable effects, and the grand main effect. After examining the partial and marginal associations for the full model, the nonsignificant effects were eliminated and the following effects were specified for the log-linear model: main effect of system; main effect of number of terminals; main effect of traditional location; main effect of nontraditional location; two-way interaction of system and number of terminals; two-way interaction of number of terminals and traditional location; two-way interaction of number of terminals and nontraditional location; and two-way interaction of traditional location and nontraditional location. This model yielded the following statistics: $L^2 = 7.02$, df = 4, p = .14.

Integration with Other Services

Four items surveyed respondents' integration of DISCOVER and SIGI with other services. These items examined the method of referral, availability of auxiliary informational resources, use of the system as a component of student services programs, and availability of other computer applications. Thus, five variables were used in developing this log-linear model: the four variables named above and the System variable. Table 4 displays the levels established for these variables.

The hierarchical model designated from the five-variable crosstabulation included three way interactions, two-variable parameters, single variable effects, and the grand main effect. After examining the partial and marginal associations for the full model, the non-significant effects were eliminated and the following effects were specified for the log-linear model: main effect of method of referral; main effect of auxiliary informational resources available; main effect of system use as a component of student services programs; main effect of other computer applications available; two-way interaction of system and system use as a component of student services programs; two-way interaction of method of referral and auxiliary informational resources available; and two-way interaction of auxiliary informational resources available and system use as a component of student services programs. The following results were computed from this model: $L^2 = 24.79$, df = 23, p = .36.

Counselor and Staff Intervention

The survey included five questions pertaining to counselor and staff intervention. Specifically, the data related to the method of counselor intervention, staff members providing services, time of intervention, staff availability, and type of support materials available. Thus, six variables were used in developing the counselor and staff intervention log-linear model: the five variables named above and the System variable. Table 5 displays the levels established for these variables.

The hierarchical model designated from the six-variable crosstabulation included all three-way interactions, two-variable parameters, single variable effects, and the grand main effect. The following effects were specified for the log-linear model after the model's non-significant effects were removed: main effect of system; main effect of method of counselor intervention; main effect of staff members who provide services; main effect of time of intervention; main effect of staff availability; main effect of type of support materials available; two-way interaction of system and type of support materials available; two-way interaction of method of counselor intervention and staff members who provide services; two-way interaction of method of counselor intervention and time of intervention; two-way interaction of staff members who provide services and time of intervention; and two-way interaction of staff availability and type of support materials available. The log-linear model from these effects generated the following results: $L^2 = 57.52$, df = 52, p = .28.

Usage Statistics

Five items surveyed respondents' usage statistics. These items' directions instructed the respondents to: estimate the total number of different persons using DISCOVER or SIGI in the 1982-83 school year; estimate the average total time (per student) spent using the system; estimate the average time length of a student appointment; estimate the average number of appointments per student; and estimate the average amount of time that elapses between making an appointment and system use. Thus, six variables were used in developing the usage statistics log-linear model: the system variable and the five variables derived from the preceding items. The levels established for the variables are detailed in Table 6. The five quantitative variables were associated with the following distributional statistics: number of system users in the 1982-1983 school year, M = 318.1, SD = 472.0 (range = 5 to 6,000); average total time spent using the system (minutes), M =149.8, SD = 71.1; average length of appointments (minutes), M =77.1, SD = 41.3; average number of student appointments, M = 2.4, SD = .8; and average time between making an appointment and using the system (days), M = 3.7, SD = 2.9.

The hierarchical model designated from the six-variable crosstabulation included all three-way interactions, two-variable parameters, single variable effects and the grand main effect. After eliminating the full model's non-significant effects, the following effects were specified for the usage statistics log-linear model: main effect of system; main effect of number of system users in the 1982-1983 school year; main effect of average total time spent using system; main effect of average time length of appointment; main effect of average number of student appointments; main effect of average time between making an appointment and system use; and two-way interaction of system and average total time spent using system. A log-linear model produced the following statistics: $L^2 = 51.29$, df = 44, p = .21.

Univariate Data Analyses

As mentioned earlier, univariate analyses were performed on items from 2 survey areas: System Management and System Implementation. In the first area, System Management, a log-linear model could not be specified: 406 of the sample's 408 respondents had data missing on one of the 6 variables used to specify the general log-linear model. In the second area, System Implementation, the hierarchical analysis generated a saturated log-linear model (i.e., no dimension reduction occurred subsequent to an analysis of marginal and partial associations). For these reasons the authors proceeded to analyze items from the two areas using t-tests and chi-square analyses.

System Management

The following statistics pertain to the number of months that the participating institutions reported using either DISCOVER or SIGI: DISCOVER, M = 9.87, SD = 7.70; SIGI, M = 20.62, SD = 14.19. Two univariate t-tests were performed to examine potential differences in the systems' availability for student use. The first t-test examined the number of days per week that the systems were available for student use. This analysis showed no significant differences between DISCOVER and SIGI respondents, t = -1.55, df= 332, p = .12. The second t-test examined the number of hours per day that the systems were available for student use; significant differences were found between the groups, t = -3.66, df = 317, p = .01. Table 7 displays the results of these analyses. Inspection of Table 7 shows that DISCOVER and SIGI were available 7.85 and 9.62 hours per day respectively.

The authors performed a series of chi-square analyses (see Table 8) to examine potential differences between survey participants' strategies for evaluating the system's impact. The results indicated that only one evaluation strategy, using the number of students served, was significantly different between the two Groups, $x^2 = 7.34$, df = 1, p = .01. Inspection of Table 8 shows that SIGI in comparison to DISCOVER respondents were more likely to include data on the number of students served, 84.3% to 71.0%.

System Implementation

Planning completed on an ad-hoc basis was the most common system implementation planning method used by both DISCOVER (50.5%) and SIGI (51.8%) respondents. The authors conducted a chi-square analysis of potential differences in planning method, a formal planning method or no planning method, by each Group. As Table 9 shows, there were no significant differences, $x^2 = .16$, df = 2, p = .93.

Chi-square analyses were also performed to examine potential differences in the Groups' providers of staff training during system implementation. As indicated in Table 10, only one significant chi-square value was computed: significant differences in the use of system developers as trainers were found, $x^2 = 6.74$, df = 1, p = .01.

Twenty-five percent of the respondents from DISCOVER sites indicated that system developers provided staff training during the implementation process, compared to 12.9 % of the respondents from SIGI sites.

Discussion

This study sought to identify the extent to which software-based or institutional-based factors influenced the national use of DISCOVER and SIGI. The assumption was that if overall significant differences did exist in DISCOVER and SIGI use, then software-based factors would have a stronger effect on system use than institutional-based factors. Results revealed few statistically significant differences in the use of DISCOVER and SIGI, and the few that were noted could probably be attributed to differences in the type and size of institutions using each system.

Data from this investigation suggests that several institutionally-based factors are largely determining DISCOVER and SIGI use. The day-to-day use of these systems does not seem to be strongly influenced by software-based factors. Given the sample's diversity, these results can probably be generalized to most sites offering CACG systems. Institutions planning to implement a CACG system could use the institutionally-based factors on current system use, reported by Sampson, Shahnasarian, and Reardon (1985), as generic base-line data to relate their system planning to national trends.

The few differences that emerged in these systems' use may be related to the fact that SIGI has been used principally in higher education settings, while DISCOVER has been used in a diversity of settings ranging from high schools to post-secondary institutions. Differences in system developers' participation in staff training is possibly related to this host site diversity, but may also be included in software-based variables.

Conceivably, by their very nature, institutionally-based factors will continue to be the dominant influence in CACG system utilization. Problems may surface, however, when software-based factors, such as a system's theoretical foundation, are not fully understood and accommodated into an institution's philosophy of services. For example, it could be confusing to counselors and clients if the CACG system selected used aptitudes as the focal point for identifying occupational alternatives and the host institution used Holland's (1985) personality typology to guide the exploration process.

Snipes and McDaniels (1981) urged counseling professionals to evaluate CACG systems in light of the theoretical bases for system designs. Harris-Bowlsbey (1983) stressed the importance of implementing a CACG system within the philosophical (theoretical) context of an office's service delivery goals. Given the notion that theory should be used to guide practice, e.g., Amatea (1984), Brammer and Shostrom (1982), Harris-Bowlsbey (1984a; 1984b), and Osipow (1983), a CACG system's effectiveness could possibly be enhanced if

its theoretical assumptions are congruent with the theoretical assumptions underlying service delivery in the office housing it.

Several explanations could account for the general lack of software-based factors, especially system's theoretical bases, in systems use. First, counselors and administrators who design and deliver services may not fully understand the theoretical assumptions inherent in CACG system design and content. In this case, even if staff members aspire to integrate theory and practice, they may lack the knowledge to complete this task. Deficient staff training in CACG use, noted by Sampson, Shahnasarian, and Reardon (1985), is likely problematic at many sites.

Second, training materials that have been available may inadequately describe the theoretical assumptions inherent in CACG system design and content. Again, integrating theory and practice, even if staff members sought to accomplish this task, would be virtually impossible without relevant systems' information.

Third, although DISCOVER and SIGI have different theoretical assumptions, perhaps the differences are insufficient to generate differential impacts on service delivery. A set of generic core concepts could possibly underlie both theories, thus accounting for the systems' similar utilization.

Implications

There is strong, longstanding support in the profession for using theory to guide the design and delivery of counseling and guidance services. In view of this issue's critical importance and the lack of differential impact of software-based factors (especially theory) found in this investigation, a variety of priorities for strengthening the relationship between theory and practice are suggested below.

Priorities for Researchers

Researchers can strengthen the relationship between theory and practice by: 1) further testing the theoretical assumptions that underlie various CACG systems; 2) examining the extent to which theory is fully integrated into various CACG systems; 3) investigating counselors' and administrators' understanding of the theoretical assumptions underlying the CACG system(s) they are using; 4) examining the quality of staff training materials, paying specific attention to the topic of integrating theory and practice; and 5) conducting further investigations on the differential impact of CACG theoretical assumptions on professional practice in order to better develop and/or select dependent measures sensitive to the impact of theory as opposed to other institutionally-based factors.

Priorities for System Developers

System developers can strengthen the relationship between theory and practice by: 1) utilizing a theoretical foundation for system

development and subsequent revision; 2) developing training materials that fully describe their system's theoretical foundation; and 3) developing training materials that fully describe the relationship between theory and practice, with examples from settings providing career counseling and guidance services.

Priorities for Practitioners

Practitioners can strengthen the relationship between theory and practice by: 1) selecting a CACG system congruent with their theoretical perspective; and 2) taking advantage of existing training opportunities. A resource that can be used to support this effort is the booklet Guidelines for the Use of Computer-Based Career Information & Guidance Systems, developed by the Technical Assistance and Training Committee of ACSCI (Caulum & Lambert, 1985). These 29 guidelines for varied user site personnel, cover the topics of theory and practice, process, user needs, system site management, physical environment, personnel, and evaluation.

References

Amatea, E.S. (1984). Contributions from theories. In H.D. Burck & R.C. Reardon (Eds.), Career development interventions (pp. 25-52). Springfield, IL: Charles C Thomas.

American College Testing Program. (1984). DISCOVER for Schools. Hunt Valley, MD: Author.

Association of Computer-Based Systems for Career Information. (1983). Computer-based systems for career information - level of service 1971-1983. Eugene, OR: ACSCI Clearinghouse, University of Oregon.

Brammer, L.M., & Shostrom, E.L. (1982). Therapeutic psychology: Fundamentals of counseling and psychotherapy (4th Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Brown, M.B. (1981). Frequency tables. In W.J. Dixon (Ed.), BMDP Statistical software (pp. 143 - 206). Los Angeles: University of California Press.

Cairo, P.C. (1983). Evaluating the effects of computer-assisted counseling systems: A selective review. The Counseling Psychologist, 11, 55-59.

Caulum, D., & Lambert, R. (Eds.). (1985). Guidelines for the use of computer-based career information and guidance systems. Eugene, OR: Association of Computer-Based Systems for Career Information, ACSCI Clearinghouse, University of Oregon.

Chapman, W., & Katz, M.R. (1981). Summary of career information systems in secondary schools: Final report of study 1. Princeton, NJ: Educational Testing Service.

Clyde, J.S. (1979). Computerized career information and guidance systems. Columbus, OH: The Ohio State University, ERIC Clearinghouse on Adult, Career, and Vocational Education. (ERIC Document Reproduction Service No. ED 179 764)

Educational Testing Service. (1984). System of Interactive Guidance and Information. Princeton, NJ: Author.

Harris, J. (1974). The computer: Guidance tool of the future. Journal of Counseling Psychology, 21, 331-339.

Harris-Bowlsbey, J. (1983). A historical perspective. In C.S. Johnson (Ed.), Microcomputers and the school counselor (pp. 1-16). Alexandria, VA: American School Counselor Association.

Harris-Bowlsbey, J. (1984a). The computer and career development. Journal of Counseling and Development, 63, 145-148.

Harris-Bowlsbey, J. (1984b). High touch and high technology: The marriage that must succeed. Counselor Education and Supervision, 24, 6-16.

Holland, J.L. (1973). Making vocational choices: A theory of careers. Englewood Cliffs, NJ: Prentice-Hall.

Holland, J.L. (1985). Making vocational choices. (2nd. Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Katz, M.R. (1966). A model of guidance for career decision-making. Vocational Guidance Quarterly, 15, 2-10.

Katz, M.R. (1968). Learning to make wise decisions. Educational Testing Service Research Memorandum, 68-40. Reprinted in Computer-based vocational guidance systems. Washington, DC: U.S. Office of Education, Government Printing Office.

Katz, M.R. (1969). Can computers make guidance decisions for students? College Board Review, 72, 13-17.

Katz, M.R. (1973). Career decision-making: A computer-based System of Interactive Guidance and Information (SIGI). From Proceedings of the 1973 Invitational Conference on Testing Problems - Measurement for Self-Understanding and Personal Development, Educational Testing Service.

Katz, M.R. (1980). SIGI: An interactive aid to career decision-making. Journal of College Student Personnel, 21, 34-40.

Knoke, D. & Burke, P.J. (1981). Log-linear models. Beverly Hills, CA: Sage Publications.

Parish, P.A., Rosenberg, H., & Wilkinson, L. (1979). Career information resources, applications, and research 1950-1979. Boulder, CO: University of Colorado.

Prediger, D.J. (1976). A world of work map for career exploration. Vocational Guidance Quarterly, 24, 198-208.

Prediger, D.J. (1981). Mapping occupations and interests: A graphic aid for vocational guidance and research. Vocational Guidance Quarterly, 30, 21-36.

Nie, N.H., Hall, C.H., Jenkins, J.G., Steinbrenner, K., & Bent, D.H. (1975). SPSS: Statistical package for the social sciences. New York: McGraw-Hill.

Osipow, S. (1983). Theories of career development (3rd. Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Sampson, J.P., Jr., Shahnasarian, M., & Reardon, R.C. (1985). A national survey of the use of DISCOVER & SIGI: Technical report No. 1. Unpublished manuscript, The Florida State University, Project LEARN - Phase II, Tallahassee, FL.

Snipes, J.K., & McDaniels, C. (1981). Theoretical foundations for career information delivery systems. Vocational Guidance Quarterly, 29, 307-314.

Super, D.E. (1957). The psychology of careers. New York: Harper & Row.

Super, D.E. (1980). A life-span, life-space approach to career development. Journal of Vocational Behavior, 16, 282-298.

Tiedeman, D.V., & O'Hara, R. (1963). Career development: Choice and adjustment. New York: CEEB.

Table 1

Descriptive Data on Survey Items by System

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
INSTITUTIONAL CHARACTERISTICS								
2 Type of Institution								
High School	99	44.2			2	1.1		
Vo/Tech School	5	2.2			3	1.6		
Community College	33	14.7			43	23.4		
Four-year college	28	12.5			65	35.3		
University	45	20.1			60	32.6		
Other	12	5.4			11	6.0		
3 How many full-time or part-time students are enrolled at your institution?								
Fewer than 1000	83	37.1			27	14.7		
1000 to 4999	74	33.0			67	36.4		
5000 to 9999	24	10.7			25	13.6		
10,000 to 14,999	18	8.0			21	11.4		
15,000 to 19,999	4	1.8			13	7.1		
20,000 to 24,999	3	1.3			11	6.0		
25,000 to 29,999	5	2.2			2	2.7		
30,000 to 34,999	1	.4			3	1.6		
Over 35,000	3	2.2			3	1.6		
4 Estimate the percentage of adult students over the age of 25 who are attending your institution.			29.7	21.4			29.8	20.8

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
5 Estimate the percentage of your DISCOVER or SIGI users who are adult students over the age of 25			22.5	25.9			25.6	23.1
SYSTEM CONFIGURATION								
6 How many computer terminals or micro-computers are available on your campus for students to use DISCOVER or SIGI?			1.4	2.8			2.4	5.9
7 What is the location of DISCOVER or SIGI computer terminals or microcomputers on your campus? (Up to three responses.)								
Guidance office	77	34.4			4	2.2		
Counseling center	43	19.2			64	34.8		
Career center	58	25.9			43	23.4		
Placement center	6	2.7			14	7.6		
Combined career planning and placement	41	18.3			74	40.2		
Library	11	4.9			10	5.4		
Residence hall	0	0			5	2.7		
Learning skills center	7	3.1			7	3.8		
Other	27	12.1			25	13.6		
INTEGRATION WITH OTHER SERVICES								
8 How are students referred to DISCOVER or SIGI?								
Individual counseling	204	91.1			178	96.7		
Group counseling	109	48.7			91	49.5		
Career course	130	58.0			127	69.0		
Walk-in basis	176	78.6			160	87.0		
Other	77	34.4			81	44.0		

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
9 Which other informational resources are available to students at your institution who use DISCOVER or SIGI?								
Books, pamphlets, files, etc.	215	96.0			179	97.3		
Audio tapes	95	42.4			85	46.2		
Filmstrips	96	42.9			78	42.4		
Video tapes	72	32.1			86	46.7		
On-the-job interviews	93	41.5			105	57.1		
Internships	75	33.5			109	59.2		
Tests/inventories	193	86.2			175	95.1		
Work experience programs	118	52.7			102	55.4		
Other	33	14.7			27	14.7		
10 Is your system used as a component of the following programs?								
Academic advisement	149	66.5			96	52.2		
Admissions recruitment programs	70	31.3			62	33.7		
Retention programs	75	33.5			87	47.3		
11 Which other computer applications are available in your office/center? (does not include word processing)								
Computer-assisted career library indexing system	21	9.4			11	6.0		
Computer-assisted testing system	25	11.2			13	7.1		
Computer-assisted personal system	18	8.0			7	3.8		
Computer-assisted instruction system	45	20.1			18	9.8		
Other	26	11.6			32	17.4		

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
12 Which computer-assisted career information systems are available for student use at your institution in addition to SIGI or DISCOVER?								
CVIS	0	0.0			0	0.0		
CIS	8	3.6			4	2.2		
GIS	16	7.1			13	7.1		
CHOICES	4	1.8			0	0.0		
COIN	9	4.0			4	2.2		
Other	18	8.0			24	13.0		
COUNSELOR AND STAFF INTERVENTION								
13 If counselor intervention is provided to assist students in obtaining maximum benefit from using DISCOVER or SIGI, what method is used to deliver the intervention								
Individual counseling	211	94.2			176	95.7		
Group counseling	103	46.0			46	25.0		
Classroom	92	41.1			69	37.5		
Other	8	3.6			9	4.9		
14 If counselor intervention is provided, what type of staff members provide the intervention?								
Professionally trained counselors (masters & doctoral)	213	95.1			172	93.5		

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
Faculty members	42	18.8			26	14.1		
Paraprofessionals	84	37.5			66	35.9		
Other	22	9.8			19	10.3		
15 If counselor intervention is provided, at what point(s) during the student's use of your system does the intervention take place?								
Prior to system use	199	88.8			160	87.0		
Between sessions at the computer	148	66.1			100	54.3		
After the student has completed the system	185	82.6			169	91.8		
16 Indicate the availability of a staff member (clerical support, paraprofessional, faculty member or counselor, in or near the room where the computer terminal is located) to readily answer student questions and deal with problems, while the student is using your system:								
Not available	2	.9			3	1.6		
Available some of the time	17	7.6			13	7.1		
Available most of the time	69	30.8			43	23.4		
Available all of the time	131	58.5			123	66.8		

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
17 Which of the following support materials are available to students who use your system?								
General user guide	207	92.4			125	67.9		
List of occupations	171	76.3			170	92.4		
Audio tape presentation	11	4.9			3	1.6		
Slide/tape presentation	8	3.6			8	4.3		
Video tape presentation	20	8.9			5	2.7		
Supplemental exercises	35	15.6			42	22.8		
Other	28	12.5			20	10.9		
No other support materials available	2	.9			4	2.2		
USAGE STATISTICS FOR ALL USERS								
18 Estimate the total number of different persons who used DISCOVER or SIGI in the 1982-83 school year.			293.5	580.9			338.6	358.5
19 Estimate the average total time (per student) spent using DISCOVER or SIGI (min.)			109.2	53.8			190.1	62.7
20 Estimate the average time length of a student appointment (min.)			62.9	27.9			91.6	47.3
21 Estimate the number of appointments per student			2.3	.9			2.5	.8

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
22 Estimate the average amount of time that elapses between making an appointment and beginning to use your system (days)			3.3	2.3			4.1	3.4
SYSTEM MANAGEMENT								
24 How long have you been using the following systems?								
1 DISCOVER			9.9	7.7				
2 SIGI							27.3	21.0
25 How many days per week is your system available for student use?			5.0	.3			5.2	.4
26 How many hours per day (on the average-Monday through Friday) is your system available for student use?			7.9	2.0			10.0	6.8
27 Which of the following strategies are you using (or have you used) to evaluate the impact of your system on the students you serve?								
1) Number of students served	159	71.0			156	84.8		
2) Student satisfaction with the system	163	72.8			137	74.5		
3) Student knowledge of self	61	27.2			48	26.1		
4) Student knowledge of occupations	64	28.6			42	22.8		

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
5) Student knowledge of career decision making	73	32.6			48	26.1		
6) Other	27	12.1			26	14.1		
7) No evaluation data is being (or has been) collected	38	17.0			23	12.5		
IMPLEMENTATION OF YOUR SYSTEM								
28 Which of the following planning methods were used in implementing your system?								
1) Formal plan with identified steps and time frames	83	37.1			74	40.2		
2) Planning completed on an ad-hoc basis as resources become available	110	49.1			81	44.0		
3) No planning method used	25	11.2			21	11.4		
29 Indicate who provided staff training during the implementation of your system								
1) In-house trainers	120	53.6			95	51.6		
2) Outside trainers	36	16.1			27	14.7		
3) System developers (ACT or ETS)	56	25.0			35	19.0		
4) No staff training was available	56	25.0			53	28.8		

(table continues)

Item No.	System							
	DISCOVER (n = 224)				SIGI (n = 184)			
	Freq.	%	M	SD	Freq.	%	M	SD
POTENTIAL NEEDS								
30 Indicate what might be done to improve the quality of your computer-assisted career guidance program.								
1) Identification of instruments for evaluation studies	117	52.2			111	60.3		
2) Inservice training for counselors and other staff members	110	49.1			95	51.6		
3) Networking with other institutional sites	89	39.7			95	51.6		
4) Specific strategies for using DISCOVER and SIGI with returning adult students	112	50.0			129	70.1		
5) Other	74	33.0			43	23.4		

Table 2

Variables Used in the Institutional Characteristics Model

Variable	No. of Levels	Level Values
System	2	Level 1 = DISCOVER Level 2 = SIGI
Type of Institution	3	Level 1 = high school Level 2 = community college; vocational/technical school Level 3 = four-year college; university
No. of full-time or part-time students	3	Level 1 = fewer than 1,000 Level 2 = 1,000 to 4,999 Level 3 = 5,000 and over
Percentage of adults over age 25	2	Level 1 = 0% to 25% Level 2 = 26% to 100%
Percentage of DISCOVER or SIGI users over age 25	2	Level 1 = 0% to 13% Level 2 = 14% to 100%

Table 3

Variables Used in System Configuration Model

Variable	No. of Levels	Level Values
System	2	Level 1 = DISCOVER Level 2 = SIGI
No. of terminals/ microcomputers	2	Level 1 = 1 Level 2 = 2 or more
Traditional location	1	Level 1 = guidance office; counseling center; career center; placement center; combined career planning and placement
Nontraditional location	1	Level 1 = library; residence hall; learning skills center; other

Table 4

Variables Used in Integration with the Other Services Model

Variable	No. of Levels	Level Values
System	2	Level 1 = DISCOVER Level 2 = SIGI
Method of referral	2	Level 1 = individual counseling; group counseling; career course Level 2 = walk-in basis; other
Auxiliary informational resources available	2	Level 1 = books, pamphlets, files, etc.; audio tapes; filmstrips; video tapes; tests/inventories Level 2 = on-the-job interviews; internships; work experience programs; other
System use as a component of student services programs	2	Level 1 = academic advisement; admissions recruitment; retention Level 2 = not used in student services programs
Other computer applications available	2	Level 1 = career library indexing system; testing system; personal counseling system, instruction system; other Level 2 = no other computer applications available

Table 5

Variables Used in the Counselor and Staff Intervention Model

Variable	No. of Levels	Level Values
System	2	Level 1 = DISCOVER Level 2 = SIGI
Method of counselor intervention		Level 1 = individual counseling Level 2 = group counseling; classroom; other
Staff members who provide services	2	Level 1 = professionally trained counselors (masters and doctoral level) Level 2 = faculty members; paraprofessionals; other
Time of intervention	2	Level 1 = prior to system use; after system use Level 2 = between computer sessions
Staff availability	2	Level 1 = not available Level 2 = available some of the time; available most of the time; available all of the time
Type of support materials available	2	Level 1 = list of occupations Level 2 = general user guide; audio tape presentation; slide/tape presentation; video tape presentation; supplemental exercises; other

Table 6

Variables Used in the Usage Statistics for All Users Model

Variable	No. of Levels	Level Values
System	2	Level 1 = DISCOVER Level 2 = SIGI
No. of system users in the '82-'83 school yr.	3	Level 1 = 0 - 200 Level 2 = 201 - 400 Level 3 = 401 and above
Avg. total time spent using the system	3	Level 1 = 60 min. or less Level 2 = 61 - 120 min. Level 3 = more than 120 min.
Avg. time of appointment	3	Level 1 = 60 min. or less Level 2 = 61 - 120 min. Level 3 = more than 120 min.
Avg. number of student appointments	3	Level 1 = 1 Level 2 = 2 Level 3 = 3 or more
Avg. time between making an appointment and system use	3	Level 1 = less than 2 Level 2 = 2 - 4 Level 3 = 4 or more

Table 7

t-tests Comparing DISCOVER and SIGI Respondents on Availability of Systems for Student Use

Availability/Group	Mean	SD	t	p
Days per week				
DISCOVER Respondents	5.03	.34	-1.55	.12
SIGI Respondents	5.09	.42		
Hours per day				
DISCOVER Respondents	7.85	2.05	-3.66	.01
SIGI Respondents	9.62	6.36		

Table 8

Chi-square Analyses of Evaluation Strategy by Group

Evaluation Strategy	Group			
	DISCOVER Respondents	SIGI Respondents	X^2	p
No. of students served pct.	71.0	84.3	7.34	.01
Student satisfaction pct.	72.8	76.5	.55	.45
Student knowledge of self pct.	27.2	27.8	.01	.91
Student knowledge of occupations pct.	28.6	26.1	.23	.63
Student knowledge of career decision making pct.	32.6	29.6	.32	.57
Other pct.	12.1	12.2	.01	.97
No evaluation data collected pct.	17.0	13.0	.88	.35

Note: Due to the multiple response format of this item, percentages may not total 100%.

Table 9

Contingency Table of Implementation Planning Method by Group

Implementation Planning Method	Group	
	DISCOVER Respondents	SIGI Respondents
Formal plan		
pct.	38.1	36.0
Ad-hoc basis		
pct.	50.5	51.8
No plan		
pct.	11.5	12.3

$X^2 = .16$, df = 2, p = .93

Table 10

Chi-square Analyses of Staff Training Providers During System Implementation by Group

Staff Training Provider	Group			
	DISCOVER Respondents	SIGI Respondents	X^2	p
In-house trainers pct.	53.6	56.0	.19	.67
Outside trainers pct.	16.1	13.8	.31	.58
System developers pct.	25.0	12.9	6.74	.01
No staff training provided pct.	25.0	31.0	1.41	.24

Note: Due to the multiple response format of this item, percentages may not total 100%.

Appendix

Survey Instrument

Survey of Institutions Using DISCOVER and SIGI

Clearinghouse for Computer-Assisted Guidance Systems
Project LEARN - Phase II
Florida State University

Directions:

Please choose the most appropriate response and place the number in the space or spaces along the right margin.

System(s) Currently in Use

1. Indicate the system or systems (up to two responses) that you currently use ____ ____

   (1) DISCOVER (on a mainframe computer)
   (2) DISCOVER (on a microcomputer or a minicomputer)
   (3) SIGI (on a mainframe or a minicomputer)
   (4) SIGI (on a microcomputer)

Institutional Characteristics

2. Type of Institution? ____

   (1) high school
   (2) vocational/technical school
   (3) community college
   (4) four-year college
   (5) university
   (6) other _____

3. How many full-time or part-time students are enrolled at your institution?

   (1) fewer than 1,000
   (2) 1,000 to 4,999
   (3) 5,000 to 9,999
   (4) 10,000 to 14,999
   (5) 15,000 to 19,999
   (6) 20,000 to 24,999
   (7) 25,000 to 29,999
   (8) 30,000 to 34,999
   (9) over 35,000

4. Estimate the percentage of adult students over the age of 25 who are attending your institution ____%

5. Estimate the percentage of your DISCOVER or SIGI users who are adult students over the age of 25. ____%

System Configuration

6. How many computer terminals or microcomputers are available on your campus for students to use DISCOVER or SIGI? ____

7. What is the location of DISCOVER or SIGI computer terminals or microcomputers on your campus? (up to three responses) ____ ____ ____

   (1) guidance office
   (2) counseling center
   (3) career center
   (4) placement center
   (5) combined career planning and placement
   (6) library
   (7) residence hall
   (8) learning skills center
   (9) other _____

Integration with Other Services

8. How are students referred to DISCOVER or SIGI? ___ ___ ___

(1) individual counseling (2) group counseling ___ ___
(3) career course (4) walk-in basis
(5) other _____

9. Which other informational resources are available to students at your institution who use DISCOVER or SIGI?

(1) books, pamphlets, files, etc. (2) audio tapes ___ ___
(3) filmstrips (4) video tapes ___ ___
(5) on-the-job interviews (6) internships ___ ___
(7) tests/inventories (8) work experience programs ___ ___
(9) other _____ ___

10. Is your system used as a component of the following programs?

academic advisement (1) yes (2) no ___
admissions recruitment programs (1) yes (2) no ___
retention programs (1) yes (2) no ___

11. Which other computer applications are available in your office/center? (do not include word processing)

computer-assisted career library indexing system (1) yes (2) no ___
computer-assisted testing system (1) yes (2) no ___
computer-assisted personal counseling system (1) yes (2) no ___
computer-assisted instruction system (1) yes (2) no ___
other _____ (1) yes (2) no ___

12. Which computer-assisted career information systems are available for student use at your institution in addition to SIGI or DISCOVER?

CVIS (1) yes (2) no ___
CIS (1) yes (2) no ___
GIS (1) yes (2) no ___
CHOICES (1) yes (2) no ___
COIN (1) yes (2) no ___
Other _____ (1) yes (2) no ___

Counselor and Staff Intervention

13. If counselor intervention is provided to assist students in obtaining maximum benefit from using DISCOVER or SIGI, what method is used to deliver the intervention?
(enter 0 if no counselor intervention is provided). ___ ___ ___

(1) individual counseling (2) group counseling ___
(3) classroom (4) other _____

14. If counselor intervention is provided, what type of staff members provide the intervention? (enter 0 if no counselor intervention ___ ___ ___

___

(1) professionally trained counselors (masters & doctoral level)
(2) faculty members
(3) paraprofessionals
(4) other _____

15. If counselor intervention is provided, at what point during the student's use of your system does the intervention take place? (enter 0 if no counselor intervention is provided). ___ ___ ___

(1) prior to system use
(2) between sessions at the computer
(3) after the student has completed the system

16. Indicate the availability of a staff member (clerical support, paraprofessional, faculty member or counselor, in or near the room where the computer terminal is located) to readily answer student questions and deal with problems, while the student is using your system: ___

(1) not available
(2) available some of the time
(3) available most of the time
(4) available all of the time

17. Which of the following support materials are available to students who use your system?

___ ___ ___

(1) general user guide
(2) list of occupations
(3) audio tape presentation
(4) slide/tape presentation
(5) video tape presentation
(6) supplemental exercises
(7) other _____
(8) no support materials available

___ ___ ___
___

Usage Statistics for All Users

18. Estimate the total number of different persons who used DISCOVER or SIGI in the 1982-83 school year ___

19. Estimate the average total time (per student) spent using DISCOVER or SIGI ___(hrs.)

20. Estimate the average time length of a student appointment ___(hrs.)

21. Estimate the average number of appointments per student ___

22. Estimate the average amount of time that elapses between making an appointment and beginning to use your system ___(days)

System Management

23. Indicate the title of the individual at your institution who has direct responsibility for managing your system: _____

24. How long have you been using the following systems?

DISCOVER ____(yrs.) ____(mos.)
SIGI ____(yrs.) ____(mos.)

25. How many days per week is your system available for student use? ____(days)

26. How many hours per day (on the average - Monday through Friday) is your system available for student use? ____(hrs.)

27. Which of the following strategies are you using (or have you used) to evaluate the impact of your system on the students you serve?

____ ____ ____ ____ ____ ____

(1) number of students served
(2) student satisfaction with the system
(3) student knowledge of self
(4) student knowledge of occupations
(5) student knowledge of career decision making
(6) other _____
(7) no evaluation data is being (or has been) collected

Implementation of Your System

28. Which of the following planning methods were used in implementing your system? ____

(1) formal plan with identified steps and time frames
(2) planning completed on an ad-hoc basis as resources become available
(3) no planning method used

29. Indicate who provided staff training during the implementation of your system. ____ ____ ____

(1) in-house trainers
(2) outside trainers
(3) system developers (ACT or ETS)
(4) no staff training was available

Potential Needs

30. Indicate what might be done to improve the quality of your computer-assisted career guidance program. ____ ____ ____ ____

(1) identification of instruments appropriate for evaluation studies ____ ____ ____ ____
(2) inservice training for counselors and other staff members
(3) networking with other institutional sites
(4) specific strategies for using DISCOVER and SIGI with returning adult students
(5) other _____
(6) other _____
(7) other _____
(8) other _____